

CHAPTER 3

DESCRIPTION AND IMPLEMENTATION OF THE NPS PROGRAM

State law and a federal judicial order require DEQ to develop water quality restoration plans for every impaired river, lake and stream by May 2007. Montana is second in the nation in the number of pollutant-specific TMDLs it has to do--2350. Four-hundred-seventy-six water bodies were removed from the 2000 303(d) list for lack of "sufficient and credible data" as defined by the 1997 amendments to the state Water Quality Act. State law requires these waters to be assessed "as soon as possible." Many of these waters may return to the impaired waterbodies list. Meeting the schedule, complying with the judicial order and retaining state control over the TMDL planning process will require:

- Improved internal coordination and communication between the various DEQ divisions, bureaus and sections.
- Greater cooperation and commitment from all local, state and federal resource agencies.
- Increased state and federal funding for the NPS program, including additional staff for monitoring and assessment, planning and coordination.
- The creation of watershed advisory groups in every watershed planning area. Many existing groups will need additional technical and financial assistance to become effective partners in developing water quality restoration plans.

3.1 WATERSHED PLANNING AREAS

To facilitate the development of TMDLs, the department created 91 "TMDL Planning Areas," generally corresponding to eight and eleven digit U.S. Geological Survey hydrologic unit codes (HUC's). Areas of similar land use and water quality problems were grouped together. In most cases, DEQ chose to use planning areas established by existing watershed groups that have already begun TMDL or watershed plan development.

In October 2000 the department adopted a schedule for completing water quality restoration plans for every watershed planning area. Most watershed planning areas contain four to ten impaired waterbodies or stream segments, although some have as few as two and some more than twenty. Altogether, there are over 875 impaired waterbodies (or segments) within these 91 planning areas. The date on the schedule indicates when all plans in the unit will be completed. However, some streams or lakes within an area may be addressed earlier. In developing the schedule the priority rankings of the 2000 303(d) List were considered. Watersheds containing more high and moderate priority water bodies were generally put earlier in the schedule. However, a few high and moderate priority water bodies were placed late in the schedule due to

Objective (May 2007) Complete restoration plans for every impaired river, lake and stream
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their expected level of complexity or the need to gather additional information to target restoration activities. Table 3-1 summarizes the number of water quality plans to be completed each year in the four major river basins. Appendix D is the official DEQ schedule for completing water quality restoration plans for each of the 91 planning areas. Flexibility is a component of the schedule. If local interest and/or a process such as the Unified Watershed Assessment calls for it, a watershed planning unit may be advanced in the schedule.

TABLE 3-1 Number of Water Quality Restoration Plans Scheduled by Basin

	2001	2002	2003	2004	2005	2006	2007
Columbia River Watershed							
Watershed Planning Units	1	3	3	2	5	3	8
Waterbody TMDLs	1	25	27	27	78	21	139
Yellowstone Region							
Watershed Planning Units	1	0	1	3	4	5	2
Waterbody TMDLs	6	0	2	15	45	44	39
Upper Missouri							
Watershed Planning Units	0	2	5	3	7	4	9
Waterbody TMDLs	0	8	58	34	58	63	81
Lower Missouri							
Watershed Planning Units	2	3	3	3	3	3	2
Waterbody TMDLs	6	31	29	10	28	19	27
Totals:							
Watershed Planning Units	4	8	12	11	19	15	22
Waterbody TMDLs	17	64	116	86	209	147	286

3.2 LOCAL WATERSHED PARTNERS

Watershed groups are comprised of citizens who have an interest in the outcome. DEQ is directed, by state law, to consult with watershed groups and conservation districts during all phases of water quality restoration planning. DEQ is directed to request the participation of farmers, ranchers, environmentalists and recreationists, as well as representatives of DNRC, the U.S. Forest Service, Bureau of Land Management, municipalities and the forest, mining and tourism industries. Each watershed group, however, reflects local land and water uses in the community. Conservation districts often take the lead in organizing watershed-based efforts and serve as the fiscal and administrative agent for the group.

The watershed approach is working very well in Montana. Across the state, more than fifty local groups are addressing water quality issues from stream flows to septic tanks. Several Montana watershed groups have won state and national recognition for their achievements:

- Green Mountain Conservation District helped organize six watershed councils on the lower Clark Fork. One of these, the Elk Creek Watershed Council, has begun to implement a water quality restoration plan that has already shown results in restoring fish populations.
- The Muddy Creek Task Force exceeded the goal of its watershed plan by reducing sedimentation by 75 percent in four years, rather than five. The Task Force has also reduced irrigation return flows and stabilized several thousand feet of streambank.

- The Careless Creek Watershed Project reduced irrigation return flows and restored 37,000 feet of streambank. The group's efforts have increased wildlife habitat by 19 percent and improved range management on 18,000 acres (so far).

These projects share several common characteristics: they all relied heavily on local support and involvement and all utilized a smorgasbord of funding sources, i.e. 319, EQIP, Fish, Wildlife and Parks' Future Fisheries Program, DNRC's Reclamation Development Grant and other programs.

The Montana experience is that where there are effective watershed action groups there are impressive water quality improvements. Effective groups:

- ◆ represent a broad cross section of the community including the water users and land managers who impact water quality as well as the people who value the waterbodies for recreation, water supply or other uses;
- ◆ are open to participation, input and ideas;
- ◆ facilitate proficient communication (speaking and listening) ;
- ◆ are able to identify and address issues;
- ◆ utilize appropriate technical expertise;
- ◆ develop solutions that a broad swathe of the community will accept;
- ◆ achieve buy-in, convince citizens to voluntarily take measures to restore and protect water quality; and
- ◆ create momentum and continuity; encourage water quality restoration and protection to become a community value.

However, thinking from a hydrological perspective requires an adjustment of geographic perception. Watershed boundaries often bear little or no relationship to political boundaries. People in the upper part of the watershed may not know people farther downstream. They may be in another community, school district and county. While a few watersheds are entirely within a single conservation district, many encompass lands in two or more districts.

Most existing watershed groups came together to address a particular impairment on a specific lake, stream or stream segment. Each group's geographic focus and objectives are largely self-defined. Some watershed groups focus on areas that coincide with the watershed planning units delineated by the TMDL development schedule. Other groups concentrate solely on subwatersheds. A few groups focus on larger areas but confine their attentions to specific problems.

As part of the TMDL planning process, DEQ will identify watershed groups or conservation districts willing to take a leadership role in the development of a water quality restoration plan for each watershed planning area. In areas where no group assumes a leadership role, DEQ will organize a local advisory committee as defined by state law. These committees will determine their own level of involvement in the process. The committee can serve in an advisory/technical review capacity or it can take an active role in the planning process participating in all aspects of plan development from assessment through monitoring and implementation.

3.3 DEVELOPING WATER QUALITY RESTORATION PLANS

DEQ has prepared an outline to provide direction and consistency in the development of water quality restoration plans. The seven steps identified below are usually addressed in the order presented, although there may be some chronological overlap. Where there are multiple causes of impairment for a given waterbody, the steps can be focused on one particular combination of beneficial use impairments and cause. For example, aquatic life support impairment due to habitat alterations may be treated separately from aquatic life impairment due to elevated metal

concentrations. In other situations, all waterbody concerns may be addressed at once. This is the preferred approach since problems and solutions are often related. The following water quality restoration plan steps are still being refined and may be changed somewhat in the future.

1. Initial Assessment (Problem Identification)

- a) review waterbody classification and standards
- b) inventory and compile existing data and other relevant information
- c) perform sufficient credible data review to identify possible impairments
 - i) identify probable causes and probable sources for beneficial use impairments
 - ii) update list of impaired waters as appropriate
 - iii) identify additional reconnaissance level monitoring needs
- d) perform reconnaissance level monitoring
- e) make additional beneficial use-support determinations
 - i) identify probable causes and probable sources as needed
 - ii) update list of impaired waters as appropriate

2. Source Characterization (Problem Definition)

- a) identify data gaps for characterizing the problem
 - i) goal must include identifying actual causes
 - ii) another goal must be to identify contributions from all significant sources or source categories
- b) identify approaches (monitoring and/or modeling etc) to fill data gaps
 - i) consider all potentially source categories, including natural causes
 - ii) consider seasonality, year to year variability for modeling or data collection
 - iii) address quality control/assurance methods
 - iv) develop written monitoring plans as needed
 - v) obtain necessary watershed information, such as soil types or land use, for modeling
- c) perform monitoring and/or modeling
- d) update problem definition using new information to describe cause & effect
 - i) describe impairments to beneficial uses
 - ii) identify the causes of the impairment (i.e. the pollutants and/or pollution)
 - iii) describe amount or percentage of pollutant and/or pollution contributions from each significant source category
 - iv) update listing of impaired waterbodies and associated causes and sources

3. Identify Targets (Goal Setting)

- a) define desirable conditions relative to water quality standards and appropriate loading capacities and available information from Steps 1 and 2
- b) set one or more targets using appropriate expressions aimed at meeting water quality standards and other related watershed goals
 - i) incorporate a factor of safety, seasonality, and other appropriate variables
 - ii) utilize concentrations associated with numeric standards when available
 - iii) focus on measures pertaining to the impaired beneficial use when possible
 - iii) allow for future growth/future sources as appropriate
- c) identify necessary reduction(s) or modification(s) needed to meet the target
 - i) identify the desired load reduction where a load calculation is possible
 - ii) ensure that any identified reductions are measurable
 - iii) ensure that current conditions minus reduction will result in meeting target
- d) review information from Steps 3a through 3c and determine an appropriate expression for the TMDL or TMDL surrogate

4. Develop Source Allocations (Apportioning Responsibilities)

- a) identify potential management practices that could help reduce loading or levels of pollution for each significant source category
- b) develop approach for achieving source reductions based on equitability, feasibility, confidence in available science, funding opportunities, and willingness to implement management practices
- c) allocate management practices and associated load reductions/restoration responsibilities for each significant source category

- i) ensure that selected management practices, once applied, will achieve desired target(s)
- d) develop an estimated timeline for achieving target(s)
 - i) consider technical, financial, and cultural aspects of implementation
 - ii) consider response times between implementing management options and obtaining water quality improvements

5. Develop a Long Term Monitoring Plan to Measure Overall Success

- a) identify parameters to be monitored to verify target(s) or trend(s)
- b) identify when and where monitoring is needed (must be at least within 5 years)
- c) identify any additional baseline monitoring needs (such as photo points, etc)
- d) identify funding and responsibilities for monitoring

6. Write a Water Quality Restoration Plan

- a) capture information from Steps 1 through 5, in draft document plan
 - i) include a summary of water quality restoration efforts to date
 - ii) include information on how the public was involved
- b) provide opportunity for watershed group, agency, landowner, and general public review and input on the draft document
- c) submit final plan to EPA for approval
- d) update list of impaired waters requiring restoration plan development

7. Identify Specific Implementation Details

- (1) Step 7 includes important planning information to help achieve water quality restoration, although the information is not required within the written plan is submitted for TMDL approval.
- (2) Steps 7 and 8 are based on a program of voluntary implementation for nonpoint source activities occurring on private property
 - a) prioritize management practices
 - b) identify technical assistance needs
 - c) identify potential projects
 - i) develop detailed schedule and other implementation specifics
 - ii) develop cost estimates and identify funding sources
 - d) identify methods to monitor success of specific management practices

TABLE 3-2 Examples Of Delegated Watershed Planning Responsibilities

	Watershed Group	Conservation District	DEQ	Other Agencies	Consultants
1.Initial Assessment	2	2	1	2	3
2.Source Characterization	1A	1A	1A	1A	3
3. Identify Targets	1A	1A	1A	1A	3
4. Develop Source Allocation	1A	1A	1A	1A	3
5. Develop Long Term Monitoring Plan	1A	1A	1A	1A	3
6. Write WQ Restoration Plan	1A	1A	1A	1A	2
7. Identify Implementation Details	1	1	2	2	2
8. Implement Management Practices	1A	1A	1A	1A	3
9. Perform Longterm Monitoring	2	2	1A	1A	2

1—Lead

1A—Colead opportunity

2—Possible major Contributor of input, data provider, or other forms of assistance

3—Opportunity to become involved in process

3.4 The Implementation Phase

The goal of the NPS Program is to restore and protect water quality through the implementation of voluntary best management practices identified in approved water quality restoration plans.

An implementation strategy is an integral part of the water quality restoration plan. The strategy should explain *who* is going to do *what*, and *where* and *when*; and *how* they are going to do it. The plan doesn't need to name specific landowners in setting BMP targets, but it should indicate how reductions will be achieved based on the causes and sources of impairment. For example, if a cause of impairment is streambank erosion, then the plan will set targets for restoration, e.g. 3500 feet of bioengineering stabilization and reduction of peak flows by improved land management on 15,000 acres of rangeland. If the source of sediment is cropland erosion then the plan will specify BMPs for reducing erosion and/or preventing sediment from reaching the streams and the total area where BMPs will be applied. In a perfect world the amount of reduction would be proportionate to contributions. However, this is not always economically feasible. The relative cost of achieving reduction targets may be greater for some contributors than others. State law directs DEQ to consider the "environmental, social and economic costs and benefits" of implementing a TMDL.

BMPs can be grouped according to the expense and difficulty of their implementation:

1. BMPs that can be easily and inexpensively implemented by farmers, ranchers, small landowners, foresters, contractors, etc. These land and water users may only require information or motivation. This can be provided by local watershed groups, conservation districts, the DEQ information/education program and/or other resource agencies or nonprofit organizations.
2. Cost-effective BMPs. These provide a return that can repay a low interest SRF (State Revolving Fund) loan. Examples of cost-effective BMPs are 1) technology that improves irrigation efficiency and reduces pumping costs. 2) range fencing that improves forage production.
3. Community restoration efforts. Oftentimes people volunteer to do work that would be prohibitively expensive for the landowner to hire a crew to do. Volunteers are especially willing to reestablish fish and wildlife habitat and clean solid waste out of lakes and streams. Planting trees in riparian zones is another popular community activity. Schools, conservation and civic organizations can all be involved. Technical and financial assistance may be obtained from resource agencies and private organizations. Local businesses are often willing to donate materials and tools.
4. More expensive BMPs that may need cost share or other financial incentives to be implemented.
5. Finally, there are some difficult and high cost restoration projects such as abandoned mine waste clean-up, deep and extensive stream bank erosion and stream channelization that will take years to restore.

A implementation strategy should include a budget that links projected costs to available resources. The implementation plan should also include a timeline that sets milestones for achieving objectives. These milestones will enable the watershed group to track progress on an annual or biennial basis and revise the plan if objectives are not being met.

The Montana Water Quality Act instructs DEQ to "inform and assist" landowners in the application of sound land, soil and water conservation practices. While the department lacks the resources to provide much direct one-on-one assistance to landowners, DEQ can link watershed groups and conservation districts to appropriate sources of technical and financial assistance. The NPS program has produced and/or helped to fund several BMP publications. It is anticipated that the watershed planning process will identify additional information and education media needs.

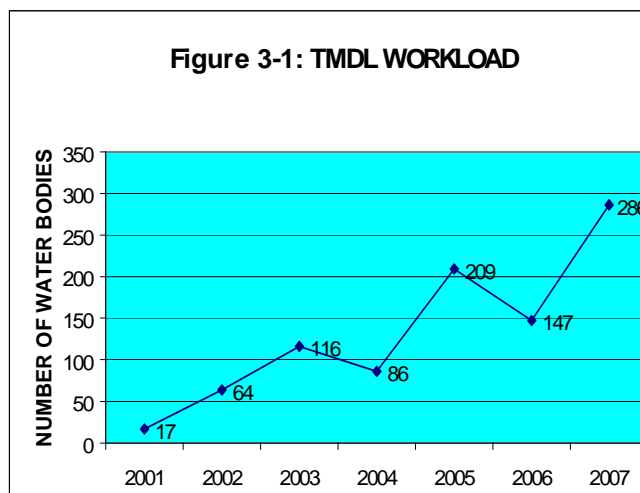
Despite the exigency of the TMDL planning process, DEQ will continue to devote resources to BMP implementation. It will be important to evaluate the effectiveness of BMPs in meeting water quality targets early in the watershed planning process. DEQ will focus 319 funds and other resources on implementation of BMPs in approved water quality restoration plans.

An objective of the NPS program is to implement water quality restoration plans within five years of EPA and DEQ approval. Thus far, all approved nonpoint source TMDL plans have

been closely tied to implementation. Indeed, water quality has been improved in several of the project areas: Deep Creek, Muddy Creek, Elk Creek, Big Creek (Park County) and Careless Creek. Provided adequate resources are available, the implementation schedule will follow the planning schedule, with most of the plans approved in 2001 being implemented by 2006 and the 2007 plans achieving implementation by May 2012. DEQ recognizes that some water quality problems will not be resolved quickly and inexpensively. The mandated five-year evaluation of water quality restoration plans will identify areas that require additional resources and greater efforts to restore beneficial uses.

3.5 FUNDING CLEAN WATER

Figure 3-1 illustrates how DEQ's workload will increase seven fold from 2001 to 2003. Yet the big crunch is going to come after 2003. Two-thirds of the watershed planning units and 75 percent of the impaired waterbodies will be addressed from 2004 to 2007. Using EPA GAP analysis, the monitoring section estimates it will require three times their present resources to complete the assessment requirements of the schedule.



Most of Montana's NPS program budget comes from the federal government. Section 319 funds pay 100 percent of the grant program and 60 percent of DEQ's program cost. In 2001 DEQ had \$1,900,000 available for section 319 projects while grant requests exceeded \$3 million dollars. DEQ could easily expend all 319 monies on developing TMDLs. However, such an approach would effectively sever the link between plan development and implementation. It would also reduce citizen enthusiasm for serving on watershed advisory committees. Why develop a plan that has little or no chance of implementation? An effective watershed group creates momentum that extends from planning into implementation. One of the tasks of a watershed group is to identify resources for implementation activities. Most will find there aren't enough funds for the work that needs to be done. Without adequate implementation funds, the required seven year planning effort could turn into an exercise in futility.

In order to meet the goals of the 1997 amendments to the Water Quality Act, comply with the federal judicial order and continue state management of the nonpoint source program, the state will have to make a more substantial commitment to water quality.

Some states, such as Washington, California and North Carolina have created dedicated funds to support clean water actions. There are many indications that Montana citizens favor increased restoration activity and spending on environmental protection.

DEQ will work with conservation districts, watershed groups and other state resource agencies to develop a proposal to create a "Montana Watershed Restoration Fund." The proposal will identify the level of funding required to complete the planning process by 2007 **and** achieve substantial water quality restoration by 2012.

The priorities for the Montana Watershed Restoration Fund would include:

- 1) Completing water quality restoration plans on schedule by
 - a) Providing increased financial support to conservation districts and local watershed groups.
 - b) Increasing DEQ water quality program staff;

2) Implementing restoration activities and best management practices identified in approved plans. Examples of priority implementation activities would include investment in irrigation infrastructure, riparian habitat restoration and cost share for BMP implementation.

In ten years, Montana could make considerable progress in restoring beneficial uses to nearly every river, lake and stream.

Objective (December 2002) Present Montana Watershed Restoration Fund Proposal to 2003 legislature.

3.6 IMPROVING INTERNAL DEQ COORDINATION

Several different bureaus and sections deal with water quality issues within the Department of Environmental Quality. Much of the time these different groups work independent of, and perhaps unaware, of the work going on in other sections and bureaus.

However, the watershed planning process requires the collaboration of many different DEQ programs. A water quality restoration plan addresses all major point and nonpoint sources of impairment. Collating the appropriate information involves the Permitting and Compliance Division, the Water Quality Standards Section and the Water Quality Monitoring Section as well as the Watershed Management Section. Watersheds that provide drinking water to a community would involve the Source Water Protection Program. Some watershed plans will need the involvement of the Mine Waste Cleanup Bureau. Where atmospheric deposition has been identified as a source, the Air Quality Planning and Standards and Air Quality Monitoring sections may be brought in. Some watershed groups will utilize the State Revolving Fund.

The two sections that coordinate most closely on watershed plan development are Watershed Management Section and Water Quality Monitoring Section. Each section has a water quality specialist assigned to each of the four major river basins. The water quality planner and monitoring specialist form an effective working team to help local watershed groups develop water quality restoration plans. The two sections are presently assigned to different bureaus and are located in separate buildings which makes coordination and communication difficult. A long-term goal of the department is to restructure and co-locate the two sections.

The department created a Watershed Management Team (WMT) to review program commitments and emerging policy issues within watersheds. The WMT reviews and evaluates DEQ activities within the sixteen sub-basins (see map on page 2-2). The WMT will also be an effective forum to identify emerging issues where a watershed approach is needed to resolve water quality problems. Additionally, the WMT identifies opportunities to coordinate, to leverage the use of department resources, to eliminate redundancies, to improve consistency in DEQ water quality strategies, and to more effectively identify local needs.

Objective (March 2001) DEQ management will designate TMDL development as one of the department's highest priorities. Department management will direct all divisions, bureaus and sections to support and collaborate with the NPS program in developing water quality restoration plans and meeting the court-ordered schedule.

Objectives (June 2001)

1. Improve coordination between monitoring and planning sections by: a) changing dual management structure; b) improving management under existing structure; and/or c) finding suitable office space to bring together staff in the same building.
2. The Resource Protection Planning and Monitoring and Data Management bureaus will organize work teams, as needed, on a geographical basis. The basic unit for internal DEQ coordination will be the sixteen sub-basins (see map page 2-2). However, in some regions other geographically defined areas may be more appropriate. Each team might include DEQ staff from the Enforcement, MPDES (permitting), Source Water, Wetlands, Water Quality Standards, State Revolving Fund, Hazardous Waste Cleanup, Mine Waste Clean-up and state Superfund programs. The teams will work together to achieve and protect water quality standards and restore beneficial uses, and whenever possible, develop TMDLs.
3. In most cases, watershed or monitoring section staff will serve as team leaders. However, other programs may be assigned the leadership role when they are responsible for the bulk of water quality activity in the basin. Team leaders will promote cooperation, coordinate the development of team goals and objectives, set work priorities, distribute workloads, determine standards of performance, set schedules and deadlines, evaluate progress and recommend corrective measures.
4. Watershed Management and Monitoring sections will utilize DEQ Intranet site to update the rest of department on watershed planning activities.

3.7 IMPROVING INTERAGENCY COORDINATION, COOPERATION AND COMMUNICATION

Even though the legislature gave DEQ the primary responsibility for implementing the Water Quality Act, protecting and restoring water quality is every state agency's (and citizen's) duty. The legislature recognized the role of other agencies in the TMDL process by specifically including them on state and local advisory committees.

Federal agencies are also compelled to comply with the Clean Water Act and state water quality standards. The new **Unified Federal Policy on Watershed Management**, promulgated in October 2000, pledges improved cooperation between federal agencies and state and local governments. The policy endorses a watershed approach to address water pollution from federal land and resource management activities. Federal agencies in five departments will identify and incorporate watershed management goals in their planning, programs and actions. Federal agencies will collaborate with state, local and tribal governments in prioritizing watershed restoration work and in identifying and implementing best management practices on federal lands. Federal agencies will also coordinate water quality monitoring and assessment activities with other resource management entities. They will share training, information and technical expertise and promote collaboration and consistency in watershed management projects. Since about a quarter of Montana is managed by the federal government the cooperation and support of these agencies on water quality issues is a critical element in restoring and protecting Montana's water resources.

Objectives (July 2001) Work with the Governor and her Cabinet to designate water quality restoration as a high state priority; and to facilitate cooperation in plan development and implementation by other state agencies. Develop Memorandums of Understanding with other state agencies delineating their roles in the TMDL process.

Objective (July 2001) - Revise Memorandums of Understanding with federal resource agencies to include the goals and objectives of the **Unified Federal Policy on Watershed Management** as well as the schedule for completing water quality restoration plans.

The NPS program has good working relationships with state and federal resource agencies. The Natural Resources Conservation Service provides valuable technical assistance to landowners, conservation districts, watershed groups and local governments in developing and implementing BMPs, TMDLs and watershed management plans. NRCS has assigned a water quality specialist to work directly with the Watershed Management Section. Even prior to the new policy the Forest Service and Bureau of Land Management cooperated in watershed monitoring and management activities. In several watershed projects, the Bureau of Reclamation contributed valuable technical assistance. The NPS program relies on data produced by many federal agencies including USGS and EPA.

On the state level, the Department of Natural Resources and Conservation is delegated many watershed and water quality responsibilities. DNRC administers the Streamside Management Zone law and the Floodplain Management Act as well as water rights and projects that impact navigable waters below the low water mark. DNRC's Trust Land Management Division manages more than five million acres of state-owned land. The division's participation and cooperation will be crucial in watersheds where the state is a major landowner. DNRC also provides assistance to conservation districts and watershed groups as well as administering the Renewable Resource Grant and Loan Program (see chapter 4).

The Department of Fish, Wildlife and Parks is also very concerned about water quality issues. Several Montana fish and wildlife species are listed as endangered, threatened or sensitive. To survive and thrive, trout need water that is "clean, cold and connected" (connected means that fish are able to move up and down stream to spawn and find food). This is a fisheries equivalent of "meeting water quality standards and restoring beneficial uses." FWP has rated 934 fish resources as "outstanding," 411 are rated as "high," 503 as "substantial," 1,214 as "moderate," and 2,010 as "limited." FWP's Future Fisheries Program funds are used to restore habitat and improve stream flows. DEQ coordinates with FWP by serving on the Bull Trout Restoration; Yellowstone Cutthroat Trout Restoration; and Westslope Cutthroat Trout Restoration committees.

The NPS program works closely with the Montana University System Water Center. The center supports water research; provides training and education for water professionals; promotes problem-solving partnerships among higher education, government, and the private sector to respond to water-related challenges and training needs; and serves as a clearinghouse for Montana water information.

All the above agencies and several more are active in the Montana Watershed Coordination Council. The council serves as a statewide coordination network for Montana's state, local and federal natural resource agencies as well as some interested private organizations. The council was created to share resources, identify and capitalize on opportunities for collaboration, and avoid duplication of efforts. The main purpose of the council is to assist local watershed groups. The council's agenda and work plans are driven by the self-identified needs of watershed groups. The council has created seven work groups to enhance collaboration among agencies and provide specific services to watershed groups. For example, the Grazing Practices Working Group developed **Best Management Practices for Grazing**. There are also working groups addressing groundwater, wetlands, water activities, water quality monitoring and information and

Objective (May 2001) Develop scoring criteria for use by the Watershed Coordination Council that gives TMDL plan development and implementation highest priority for 319 grants. Work with the council to give priority to projects based on the court-ordered schedule.

education. For more information about the watershed council see <http://water.montana.edu/default.htm>

One of the most substantive tasks of the council is to review Section 319 grant requests and make recommendations to the Department of Environmental Quality. More than two dozen people from various agencies and organizations are involved in the review process. This approach gives DEQ a wide range of technical expertise, project management experience and scientific knowledge in the selection of 319 projects. However, DEQ must target a larger share of 319 funds to water quality restoration planning that results in TMDL development and implementation.

Another major source of funds for water quality projects is the Environmental Quality Incentives Program (EQIP) administered by the USDA Natural Resources Conservation Service (NRCS). EQIP assistance has been crucial to implementing projects across the state including the Sun River, Careless Creek, Sage Creek, Ruby River, and Musselshell River. Some watershed groups have combined EQIP and 319 to fund projects. EQIP funds are allocated based on the recommendations of a state technical committee that includes representatives from farm and conservation organizations, Indian Tribes, conservation districts and state agencies including DEQ. The Montana priorities for EQIP funds are water quality, water quantity and grazing land health. In 2000, there were 379 applications totaling \$9.7 million. Only 244 projects for a total of \$4.63 million could be funded.

Objective (June 2001) Request that NRCS State Technical Committee give priority to watersheds that have developed water quality restoration plans that show a direct relationship between best management practice application and quantifiable water quality improvement.

DEQ participates in other statewide forums that will continue to be a source of direction and coordination for DEQ watershed activities. These advisory councils and forums include:

- Source Water Assessment Program Advisory Council
- Statewide TMDL Advisory Group
- Montana Association of Counties
- Montana League of Cities and Towns
- Wetlands Advisory Council
- Water Pollution Control Advisory Council
- Board of Environmental Review

Coordinating with Tribes

There are seven sovereign Indian reservations within Montana. The tribes have the authority to establish water quality standards and develop water quality restoration plans for water bodies within their jurisdictions. The state does not include waters within reservation boundaries on its 303(d) list, nor did DEQ include tribal waters in the schedule for developing water quality restoration plans. However, many watersheds include lands under both tribal and state jurisdiction. In some cases the tribal boundaries follow the middle of major streams and rivers.

Objective (December 2001) Develop Memorandums of Understanding with tribal governments defining roles and responsibilities for developing water quality restoration plans for watersheds with shared jurisdiction.

Addressing water quality issues in these watersheds will require a coordinated monitoring, planning and implementation process. Each of DEQ's four basin coordinators will be the contact person for coordination with the tribes in their areas.

3.8 WATERSHED APPROACH INVENTORY, MONITORING, CHARACTERIZATION, AND ASSESSMENT

3.8.1 Montana Statewide Monitoring Plan

Montana DEQ currently is coordinating with the US Geological Survey (USGS) to develop a new water quality monitoring plan for Montana. The plan will include the monitoring of fixed stations and reference sites, and stream assessments.

Fixed Stations

The major goal of the fixed station monitoring is to determine statewide water quality status and trends. Thirty-seven fixed station sites are currently being monitored. The fixed station sites are located at active USGS flow gauging stations and include the mainstem of Montana rivers and their major tributaries. At this time, fixed station monitoring includes four water column samplings per year. Water column samples are collected in the spring during the rising, peak and falling limbs of the runoff portion of the annual hydrograph, plus during the late summer to characterize base flow. The water column is analyzed for total suspended sediment, nutrients, metals, common ions, pH, temperature, and conductivity. In the future DEQ intends to sample for sediment (streambed) trace metals, benthic chlorophyll, and macroinvertebrate and algae communities at the fixed station sites once per year (late summer). DEQ also anticipates assessing the fish communities every five years (8 sites/year), and conducting an air photo survey of each river segment or major tributary every ten years (4 sites/year). These evaluations will characterize the streams' geomorphology and riparian habitats.

Reference Sites

One objective of monitoring the reference sites will be to improve the beneficial use support decision criteria that DEQ uses to determine if a stream segment is water-quality limited. Once adequate funding is identified, DEQ hopes to sample approximately 12-16 reference sites per year. These reference sites will be evenly distributed between four regions: Upper Missouri, Lower Missouri, Yellowstone and Columbia; new reference sites will be selected every three years. DEQ anticipates working with local groups and agencies to establish the location of the reference sites that are representative of the major stream types found in Montana. Reference site monitoring will probably include the sampling and analyses of the water column and sediment (streambed) chemistry, periphyton, chlorophyll, community structure, and macroinvertebrates.

Stream Reach Assessments

The objective of the targeted stream reach assessment is to identify stream segments that are not currently on the 303(d) list, which are water quality limited and require restoration plans. DEQ anticipates collecting a combination of chemical and biological data when conducting stream reach assessments. DEQ also intends to conduct stream reach habitat assessments that would include a combination of qualitative evaluations with photo points, and quantitative measurements of the stream geomorphology and riparian vegetation. These assessments will likely target stream reaches that are perceived by the public to be water quality limited. The Water Quality Monitoring Work Group (WQMWG) of the Montana Watershed Coordination Council (MWCC) will serve as a forum for discussing and setting monitoring priorities. The

Objective (May 2005) Complete assessments for all TMDL Watershed Planning Areas.

ber of stream reach assessments that will be conducted each year will be dependent on available funding.

3.8.2 Assessment

The Non-Point Source (NPS) Program participates in and uses a wide range of assessments at all levels in the watershed framework. Assessments are completed to fulfill CWA requirements,

determine status of the resource, identify remediation needs, and set program priorities. Each assessment task has its own set of assessment endpoints and guidelines. A list of the assessments that involve the NPS Program will be briefly discussed.

Assessments Completed Primarily in a Statewide Forum: DEQ is involved with several assessments through the Montana Watershed Coordination Council (MWCC). The MWCC discusses activities in a different major river basin each calendar quarter (e.g. Lower Missouri). A subcommittee of the MWCC also coordinates the Unified Watershed Assessment, which the NPS program publishes.

Assessments Completed Primarily to Support DEQ Programs: DEQ organizes an assessment process to develop and identify impaired waterbodies that are included on the 303(d) list; this list is updated every two years. DEQ has guidance for determining if data are sufficient and credible for making listing decisions and beneficial use support determinations. This TMDL program also has a list of 13 different parameters to guide TMDL prioritization.

DEQ produces the 305(b) Assessment document that is reported to Congress on the status of the state's waterbodies every two years. The format is under consideration to determine how it can be designed to better support DEQ and the needs of local group waterbody assessments.

DEQ has produced the State Source Water Assessments Plan, which describes the statewide strategy for implementing the drinking water supply assessment and protection program.

The State Revolving Fund conducts a NPS and point source needs assessment to identify potential loan needs that the program can support.

The Wetlands Program supports an ongoing wetlands identification program that provides information to the National Wetlands Inventory. This program also supports the assessment of Unique Wetland Habitats for the Heritage Program.

The Remediation Division's Abandoned Mine Cleanup Program has completed an assessment to identify and assign priorities to abandoned mines for a statewide schedule of cleanups.

The Wetlands program supports an ongoing wetlands identification program that provides information to the National Wetlands Inventory. This program also supports the assessment of Unique Wetland Habitats for the Heritage Program.

Assessments developed by local watershed groups and local governments: Local watershed groups undertake watershed projects to address a wide range of objectives. Water quality represents only one of the many possible objectives that drive local watershed planning efforts including:

- Community Planning for growth and development;
- Source Water Assessment to protect drinking water supplies;
- Planning to evaluate water quantity management needs;
- Riparian assessments to support fishery habitat needs;
- Grazing management evaluations;
- Assess the impact of weeds on range conditions and as agricultural pests;
- Forest fire susceptibility to support prevention and response alternatives;
- Others

Know Your Watershed (KYW) is a national coalition of local watershed groups and agencies whose mission is to support the development of local watershed partnerships. The KYW has assisted hundreds of local watershed groups become established and to develop and implement watershed plans. KYW believes that a critical first step in the watershed process is inviting all interested stakeholders to participate. The next critical element is the acquisition of information that will be essential to watershed assessment and planning. The following list of maps and

information that provide critical baseline information about the watershed is based on recommendations provided by KYW (<http://www.ctic.purdue.edu/KYW/>) including:

- watershed boundaries;
- terrain (slopes, aspects);
- water bodies (flows, volumes);
- soil types;
- geology;
- roads;
- land uses;
- vegetation;
- recreational uses;
- fish and game surveys;
- water quality surveys;
- development and employment trends; and
- historical uses.

3.8.3 Information Management Systems

The internet has been a boon to resource managers in Montana. Today anyone with access to the worldwide web can obtain a lot of information about our watersheds. The Natural Resources Information System (NRIS) of the Montana State Library developed EnviroNet, a web-based application providing watershed information from DEQ's waterbody assessment data base. EnviroNet is an extension of current web services provided by NRIS and includes the following functions:

- Searching for and downloading many GIS coverages in data clearinghouses.
- Providing links to other data providers and other data systems.

As NRIS and partner agencies move forward with EnviroNet, its current limitations will be addressed, including:

- There is no easy way to query and integrate data from on-site NRIS files and other data providers
- Entire GIS coverages must be downloaded. No function allows the user to select a particular geographic extent and download only that portion.
- Data from multiple sites frequently requires significant reformatting.
- Data is stored in a wide variety of formats and is not necessarily compatible.
- Data is geo referenced in a wide variety of formats.
- Meta data and data citations are highly variable - from good to not available.

NRIS has proposed the following strategy to improve EnviroNet's capabilities:

- Centralized Data Strategy - Combine tabular data from within NRIS and from other agencies (via data exchange formats) into a single source, centralized database at NRIS that is capable of storing tabular and spatial data.

- Include standardized stream and water information data and data obtained through exchange formats.
- Include NRIS GIS data, using latest technology from Earth Science Research Institute (ESRI).
- Include Natural Heritage Data.

EnviroNet will be equally accessible to local watershed groups, and state and federal agencies. As indicated by the proposed strategy several agencies and organizations will be providing EnviroNet with the information necessary to support watershed planning and management. EnviroNet benefits its users in many ways including the following:

- Providing a single, independent, platform for application interface to all of NRIS data, as well as data incorporated from other data providers through exchange formats over the internet.
- Faster, more powerful, and more efficient search and download capabilities - users could specify their area of interest, choose the themes or data layers they want, and view a map or report online, or download data to their local machines.
- Data is stored in a single database, formats are standardized, and all data is compatible and geo-referenced in a single system.
- Datasets could be quickly updated as needed.
- Tabular, graphic, and geographic input and output options. Such a system would provide great flexibility to agencies in input and output formats. Query interfaces could be geographic (map) or tabular in nature. Custom reports, summaries, graphics, and maps could be generated on-line. Tabular and spatial data could be downloaded. For sensitive data, security could be built in, to allow access to authorized users only.

DEQ has contracted with NRIS to develop a web-based GIS application specifically for watershed planning and TMDL development. Conservation districts, watershed groups, DEQ and other resource agencies are the primary audience for the program. Software development has been completed and the interactive mapping function is up and running at <http://nris.state.mt.us/mapper/tmdloutreach>. A related web page will include access to interactive mapping applications, updates, a calendar of events (workshops and meetings), training materials, and a request for feedback. As part of the contract, NRIS is providing training on TMDL applications for users. This includes on-line tutorials and help screens as well as workshops and informational seminars.

Over the long-term DEQ's web based information system for watershed planning will continue to evolve. The department will shift to an Enterprise-GIS system that will increase our capacity to collect, store and share data.

3.9 NPS PROTECTION STRATEGY

3.9.1 Nondegradation

Montana has many rivers, streams and lakes which are *not* impaired. These outstanding water resources are very important to Montana residents and visitors. Tourism is one of Montana's leading industries. Visitors from throughout the country and world come to Montana to fish, swim, canoe, river-raft and admire the state's scenic beauty.

State law requires DEQ to prevent the degradation of high quality waters. High quality waters include all state waters that support at least one of their designated beneficial uses. The department may not authorize degradation of high quality waters unless it has been demonstrated that:

- (a) degradation is necessary because there are no economically, environmentally, and technologically feasible modifications to the proposed project that would result in no degradation;

- (b) the proposed project will result in important economic or social development and that the benefit of the development exceeds the costs to society of allowing degradation of high-quality waters;
- (c) existing and anticipated use of state waters will be fully protected; and
- (d) the least degrading water quality protection practices determined by the department to be economically, environmentally, and technologically feasible will be fully implemented by the applicant prior to and during the proposed activity. (MCA 75-5-303)

Nonpoint source activities occurring after April 29, 1993, are exempt if two requirements are met: (1) existing and anticipated uses will be protected; and (2) reasonable land, soil, and water conservation practices are being implemented.

3.9.2 Potential Threats to Montana Water Quality

Within the time frame of this plan (2001-2012) water quality impacts associated with agriculture and forestry will likely decline. The forestry industry has made considerable progress in implementing best management practices and will continue to refine and focus their efforts. Forest road building has declined substantially and the U.S. Forest Service and other public and private forest managers are devoting resources to remediating the impacts of past logging activities.

The amount of land devoted to agriculture production will probably not increase. Nor is there likely to be a significant increase in irrigated acreage. As farmers and ranchers apply best management practices identified in watershed plans, water quality will show quantifiable improvement.

However, the water quality impacts of construction-related activities will probably increase as Montana's population continues to grow. Much of the growth will occur in a limited number of watersheds in western Montana. There are also potential threats from more septic systems, small acreage farms and urban and suburban stormwater runoff.

High energy prices will encourage development of Montana's fossil fuel resources with related water quality impairments. The construction of new energy generating facilities will also have impacts such as reducing flows, increasing water temperatures and adding to atmospheric deposition. Atmospheric deposition has the potential to degrade Montana's pristine alpine lakes and streams.

3.9.3 A Watershed Approach to Protecting Water Quality

The watershed approach facilitates water quality protection. The watershed plan will delineate potential threats to water quality; for example increased rural population or new mining activities. A prevention strategy ought to be a component of a water quality restoration plan. Once a restoration plan is implemented it should be revised by the local watershed group to become a water quality *protection* plan. The plan would include a schedule for regular water quality monitoring (which could be tied to DEQ's rotating basin schedule to prevent duplication and efficiently utilize resources) as well as a mechanism for recognizing and responding to potential threats or new sources of impairment.

Many of the NPS strategies described in Chapter 2 serve as both restoration and protection activities. For example, the forestry BMP audit program prevents pollution by reducing impacts from harvesting and other silvicultural activities (see page 2-12).

The intra-agency and interagency collaborations described in the next chapter will also prevent water quality degradation.

Objective (ongoing) Promote water quality protection through newsletter and newspaper articles, brochures, websites, field tours, public presentations and other appropriate means.